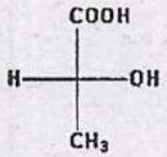
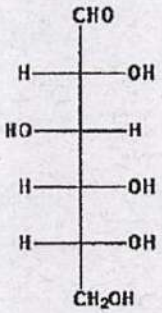
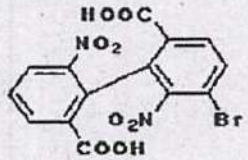
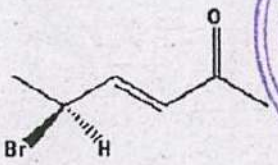
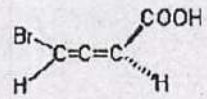
19. (a) Assign R/S for the following molecules

(i) 

(ii) 

(iii) 

(iv) 

(v) 

(b) Write an account on asymmetric synthesis with any one suitable example.

20. (a) Comment on conformations and stability of cyclohexanone.

(b) Esterification as well as hydrolysis occur more readily with the equatorial substituent in cyclohexanes. Justify.

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Shanmuga Industries Arts & Science College T.V.Malai

APRIL/MAY 2024

23PCH11 — ORGANIC REACTION MECHANISM – I

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is meant by isotopic labelling?
2. What is the role of trapping in reaction intermediate?
3. Explain the aromaticity of annulenes.
4. How carbon electrophile is involved in Friedel-Crafts alkylation?
5. How the rate expression for S_N1 and S_N2 reactions differ?
6. Define Walden inversion.
7. List the types of symmetry.
8. What is prochirality?
9. Define intramolecular rearrangement.
10. Sketch Brett's rule.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Explain briefly Hammond postulate.

Or

(b) Discuss the following :

(i) Linear free energy relationship.

(ii) Partial rate factor.

12. (a) How will you explain nitrogen electrophile involvement in nitration and diazonium coupling?

Or

(b) Differentiate orientation, reactivity of di- and poly substituted phenol.

13. (a) Write the mechanism of Semmelet – Hauser rearrangement.

Or

(b) What happened the aliphatic nucleophilic substitution at an allylic carbon and vinyl carbon?

14. (a) Define absolute configuration. Explain the Cahn – Ingold – Prelog rules to assign absolute configuration.

Or

(b) Discuss the configurations of allenes, spiranes and biphenyls.

15. (a) Write a note on neighboring group participation.

Or

(b) Elaborate optical rotatory dispersion and octant rule.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Derive Hammett and Taft equations.

17. Explain Briefly :

(a) Bimolecular electrophilic substitution (SE2).

(b) Internal electrophilic substitution (SEi).

18. Illustrate S_N1 mechanism with evidences.